



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,821	10/29/2003	Robert Cochran	200311026-1	9535

22879 7590 04/18/2006

HEWLETT PACKARD COMPANY  
P O BOX 272400, 3404 E. HARMONY ROAD  
INTELLECTUAL PROPERTY ADMINISTRATION  
FORT COLLINS, CO 80527-2400

EXAMINER

VY, HUNG T

ART UNIT PAPER NUMBER

2821

DATE MAILED: 04/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/697,821

Applicant(s)

COCHRAN ET AL.

Examiner

Hung T. Vy

Art Unit

2821

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 October 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 October 2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/29/2003</u> . | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**  
**Information Disclosure Statement**

1. The information disclosure statement (IDS) submitted on 10/29/2003. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

**Claim Rejections - 35 USC § 102**

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --  
(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-25 are rejected under 35 U. S. C. § 102 (b) as being anticipated by Matsunami et al. (U.S. pub. No. 2004/0193760).

Regarding claims 1, 10, 18 and 24-25, Matsunami et al. discloses a storage system and a method of managing information storage in a storage system comprising: a storage array containing a plurality of storage devices of at least three types (1100,1101,1102, 14 and 170 (FC disk Pool 0), 171(SATA disk Pool 1)) and having a respective class hierarchy (See fig. 1 and 7); and a controller (CHN0, CHN1...) coupled to the storage device hierarchy and capable of executing an hierarchical storage management capability that selectively controls access to the hierarchy of storage devices (See fig. 1 and see abstract).

With respect to claims 2,11, Matsunami et al. discloses the storage array contains a hierarchy of storage devices of at least three types and having a respective performance hierarchy (see paragraph 0014).

With respect to claims 3, 12 and 21, Matsunami et al. discloses the storage array contains a hierarchy of storage devices of at least three types 1100,1101,1102, 14 and 170 (FC disk Pool 0), 171(SATA disk Pool 1)) and having a respective economic or cost hierarchy (see paragraph 0017).

With respect to claim 4, Matsunami et al. discloses a solid-state cache (14) and shared memory (15) supplying storage for a level of hierarchical storage for a level of hierarchical storage (see fig. 1).

With respect to claim 5, Matsunami et al. discloses relatively higher performance small computer system Interface (SCSI) and/or Fibre Channel (FC) storage device (170) supplying storage for a level of hierarchical storage (see fig. 1).

With respect to claim 6, Matsunami et al. discloses relatively lower performance serial AT-attached (SATA) storage devices supplying storage (171) for a level of hierarchical storage (see fig. 1).

With respect to claims 7, 14-17, and 23, Matsunami et al. discloses a solid state cache (14) and shared memory supplying storage (15) for a first level of hierarchical storage; relatively higher performance Small Computer Systems Interface (SCSI) and/or Fibre Channel (FC) storage devices supplying storage (170) for a second level of hierarchical storage; relatively lower performance Serial AT-attached (SATA) storage devices (171) supplying storage for a level of hierarchical storage; and it is inherent that

Art Unit: 2821

a process executable in the controller allocates storage capacity of the SATA storage devices (170) to low access customer data and to short-term and unpredictable storage usage because the Serial AT-attached (SATA) storage devices is slowest speed in the three storage device (See fig. 1).

With respect to claims 8-9, Matsunami et al. discloses a hierarchical storage management controller for usage within a disk array utilizing Fibre Channel (FC) (170) and SATA disk drivers (171) and that allocates SATA storage as uncommitted and unstructured storage (fig. 1), it is inherent that Matsunami et al. discloses an hierarchical storage management controller for usage within a disk array utilizing Fibre Channel (FC) (170) and SATA disk drives (171) and that allocates SATA storage for intra-array and/or inter-array data transfers including logical unit LU (LU0, LU1...) copies and snapshots because with same the structure as logical unit (LU0, LU1..), the logical unit (LU) will provide the same function as copies and snapshots (see fig. 7 or see paragraph 0130).

With respect to claim 13, it is inherent that Matsunami et al. discloses at least a volatile-shared memory, a relatively higher performance non-volatile storage, and a relatively lower performance non-volatile storage because Matsunami et al. discloses the cache memory controller (16) and cache (14) and share memory (15). Further, cache memory is always Ram (volatile storage) that holds the temporary storage data waiting for next executed of processor.

With respect to claim 22, Matsunami et al. discloses a cabinet enclosing (1) the disk array and the controller (see fig. 1).

With respect to claims 19-20, Matsunami et al. discloses a cache memory (14) coupled to the controller (16) and operable as an additional storage in the class hierarchy (see fig. 1).

### **Conclusion**

3. When responding to the office action, Applicants are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Vy whose telephone number is (571) 272-1954. The examiner can normally be reached on Monday-Friday 8:30 am - 5:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on (571) 272-1834. The fax numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications.

Information regarding the status of an application may be obtained from the patent Application Information Retrieval (PAIR) system. Status information for published application may be obtained from either private Pair or Public Pair. Status information for unpublished applications is available through Private Pair only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have question on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

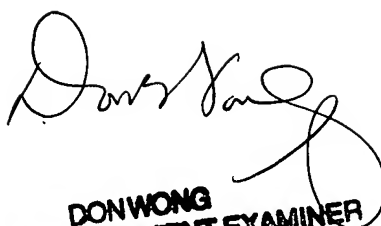
Hung T. Vy  
Art Unit 2821

Application/Control Number: 10/697,821

Page 6

Art Unit: 2821

April 12, 2006.

A handwritten signature in black ink, appearing to read "Don Wong", is written over a rectangular stamp.

**DONWONG**  
**SUPERVISORY PATENT EXAMINER**